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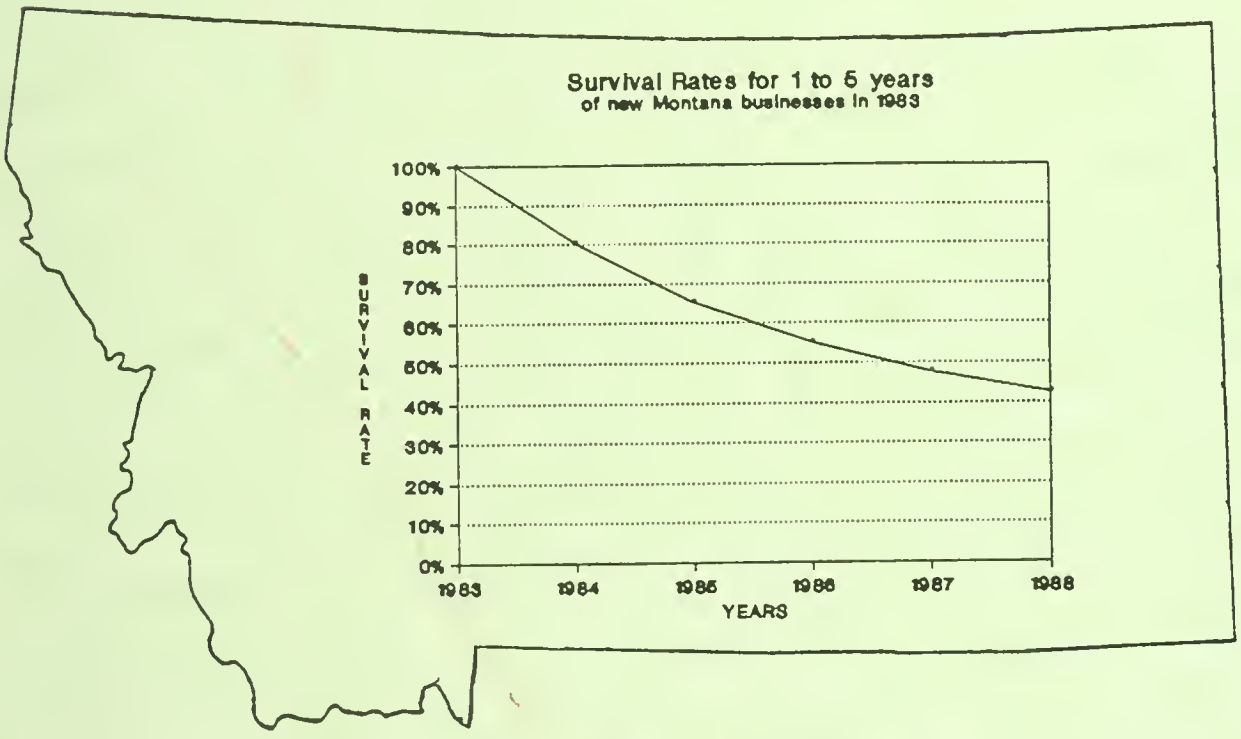

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MONTANA BUSINESS BIRTH-DEATH STUDY

STATE OF MONTANA
STAN STEPHENS, GOVERNOR

DEPARTMENT OF LABOR AND INDUSTRY
MIKE MICONE, COMMISSIONER

Produced by:

Research and Analysis Bureau
in cooperation with the
Small Business Development
Center of the Montana
Department of Commerce

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SUMMARY

The first goal of this study was to calculate the survival rates of new businesses for one to five years by industry and county. A 43% survival rate after five years was found. Six out of every ten new businesses in 1983 did not make it past five years. In addition, two out of every ten new businesses in 1983 did not make it through the first year. This translates into an 80% one-year survival rate.

The Department of Labor and Industry did a similar study in 1986 called, Montana Business Birth-Death Study: 1984-1986. The one year survival rate calculated in the previous study was 90%.

Keep in mind that the results of this study are for the five years after 1983. The overall economy for the five years following 1983 had a lot of impact on the new businesses. While the calculated survival rates for each county and SIC code are what was experienced, an analysis on a different five years may result in different conclusions. This is because of the dynamic or ever-changing economy.

The second objective was to determine if there were any significant differences between an active business and an inactive business. The areas examined were in education, experience and sources of funding. There were only a few slight differences found. Overall, the average active business was similar to the average inactive business.

Questionnaires sent to employers and charts of the data not specifically cited in the study are provided in the appendix.

INTRODUCTION

The Montana business birth-death study, conducted by the Research and Analysis Bureau of the Montana Department of Labor and Industry examined the survival of new businesses. The study also examined the education and finance level of owners of surviving and defunct businesses.

This study had two goals;

1. Businesses born in 1983 were traced for five years to determine survival rates over one to five years. Survival rates were also determined by industry and county.

2. Significant similarities or differences between active and inactive business were identified. This was accomplished by examining the average level of education, experience and outside sources of funds the owner(s) had when opening the business.

UNEMPLOYMENT INSURANCE COVERAGE

The Montana Unemployment Insurance employer contribution file was used to identify businesses which registered between January 1, 1983 and December 31, 1983. The researchers used these files because it was the largest data bank for Montana businesses available to the Research and Analysis Bureau.

A business must register with the Unemployment Insurance Division if it meets one or more of the following criteria of the Montana Unemployment Insurance law:

a) The employer's total annual payroll for the current or preceding calendar year exceeds $1000.00 (Total payroll is all wages paid to all employees).

b) The employer acquired all or a portion of a business which is presently subject to the Montana Unemployment Insurance law.

c) The employer is subject to the Federal Unemployment Tax Act. (FUTA)

d) Agricultural employers and those hiring domestic workers are covered as long as they meet the requirements of the Montana Unemployment Insurance laws. These include employers who pay out more than $20,000 per quarter or employ 10 or more workers in 20 weeks in the current or preceding calendar year.

DATABASE PROCESSING

The database started with 4296 businesses who had new unemployment insurance account numbers in 1983. After pulling each account file, the researchers examined them to determine if the business was new in 1983. If the business was not new in 1983, it was eliminated from the database. Out of the original 4296 businesses, 2427 were kept for the study.

The definition of a new business is:

a) A new business is one which does not have a predecessor.

b) It does not have or has not had an unemployment insurance account number, active or inactive.

These requirements eliminated the businesses that arose from mergers, takeovers, splits and other ownership changes as well as seasonal businesses. Ownership changes include a business incorporating or a partnership dropping or adding partners. Seasonal businesses employ and lay off workers to meet work requirements of a predictable, cyclical nature.

The next step was to determine whether each new business that started in 1983 was still active, had changed owners or had closed its doors. If this determination could not be made using information from within the unemployment insurance system, the businesses were sent a questionnaire.

QUESTIONNAIRES SENT TO INACTIVE ACCOUNTS

Questionnaires were sent to 1224 businesses. The questionnaire was designed to ascertain whether the business was active or inactive, even though the database showed the business with an inactive unemployment insurance account number.

The first question dealt with the cancellation of the account. The questionnaire asked the proprietor whether or not the business was still operating. There were five options for the employer to choose from:

1. Business closure for any reason other than transfer of ownership - month and year of closure.

2. Business has reorganized or has had a transfer of ownership (ie. sold, incorporated) - Name of business if changed and name of new owner.

3. Business is still operating, but all employees covered by unemployment insurance are laid off and therefore the business is not currently liable for unemployment

insurance. Is the situation temporary/seasonal or permanent?

4. Business is still operating (with employees), and reason for unemployment insurance cancellation is unknown.

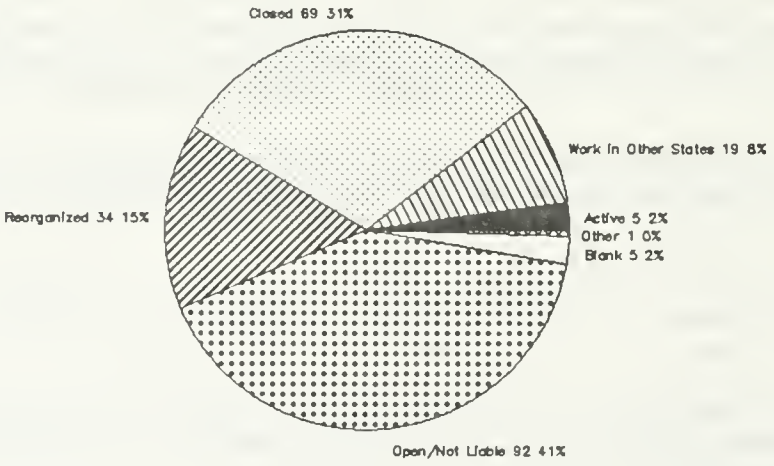
5. Other (please specify).

Of the 1224 questionnaires mailed, 225 (18.4%) were returned completed. The addresses on file for 336 (27.5%) businesses were incorrect or no longer current and the questionnaires were returned by the post office.

Many of the returned unopened letters stated on the envelope that the business closed. The researchers used the date of cancellation of the unemployment insurance account number as the death date. The cancellation date of the unemployment insurance account number for the questionnaires sent but never returned was also used as the death date.

The pie graph below is a compilation of the questionnaires the owners completed and returned. The actual number of questionnaires is next to the description of each classification. The percentage is adjacent to the actual number.

Classifications of Surveyed Businesses
with a cancelled UI account number



Fifty-eight percent of the businesses were still active even though they had a cancelled account number. Normally those businesses were no longer subject to unemployment insurance so their account number was cancelled by the Unemployment Insurance Division.

Fifteen percent had reorganized their business, such as having incorporated or having a change in ownership status. The reorganization resulted in the business being given a new unemployment insurance account number. The researchers traced the reorganized accounts to see if the new account number was still active or cancelled. If cancelled, we examined the files to determine why.

Two percent who were active had changed their number for a reason other than reorganization. The Unemployment Insurance Division may have changed the number for clerical reasons. For example, the Federal Unemployment Insurance Identification number changed and therefore the Unemployment Insurance Division replaced the old state unemployment insurance account number with a new one.

The largest classification of businesses with a cancelled unemployment insurance account number were the firms that were open but were not liable for unemployment insurance. Most of these businesses had scaled down until just the owners were working. They had become operations where only the owners work in the business. Forty-one percent of the cancelled businesses were under this classification.

Checking the enterprises that were active but not liable, eighteen stated this was a temporary/seasonal occurrence. However, sixty-five of them reported this was a permanent situation. Nine of them did not tell whether this situation was permanent or temporary.

The other four questions dealt with the education and experience the owners acquired before starting the business in 1983. The results appear later in the study.

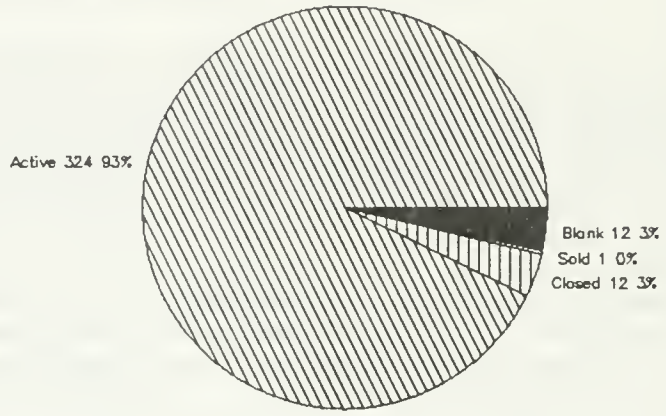
QUESTIONNAIRES SENT TO ACTIVE ACCOUNTS

Businesses with an active unemployment insurance account number also received a questionnaire. The researchers sent 829 questionnaires to the active accounts to find out how many were actually alive and which were inactive yet keeping their unemployment insurance account number active. Many establishments do this in case they open again.

The first question inquired whether the business was active, if not, the month and year it closed. Of the 348 questionnaires returned, 93% were active. Less than 4% had closed or sold.

Three percent returned their questionnaire blank. The pie chart on the next page illustrates the make-up of the answers to question one.

Classification of Surveyed Businesses
with an active UI account number



(active as of November 1989)

It can be assumed that an active unemployment insurance account number was still an open business since 93% of the above responses were active. It is not an account kept open even though the business was not now operating.

STANDARD INDUSTRIAL CLASSIFICATIONS

The Research and Analysis Bureau uses the Standard Industrial Classification Manual (SIC) to define the type of industry in which each business operates. The researchers separated the data into SIC code classifications. The Divisions were;

Division A (01-09) Agriculture, Forestry and Fishing

Division B (10-14) Mining

Division C (15-17) Construction

Division D (20-39) Manufacturing

Division E (40-49) Transportation, Communications, Electric, Gas and Sanitary Services

Division F (50-51) Wholesale Trade

Division G (52-59) Retail Trade

Division H (60-67) Finance, Insurance and Real Estate

Division I (70-89) Services

Division K (99) Non-classifiable Establishments.

Throughout the study, the divisions will often be put into parentheses like this: (Division A). SIC codes will also be given within parentheses such as: Eating and Drinking Places (58). This indicates that the SIC code for Eating and Drinking Places is 58.

NEW BUSINESSES BY INDUSTRY AND COUNTY

In 1983, 2427 new businesses began in the state of Montana. Three major industry groups dominated the new businesses.

Services (70-89) were first with 680 new businesses or 28%. Two of the largest major groups in services were Business Services (79) with 129 and Health Services (80) with 80 new starts in 1983. The dominance of service industries reflected the national trend of a service-oriented economy.

Second was Retail Trade (52-59) with 466 or 19.2%. The two largest groups that made up the total in Retail Trade were Eating and Drinking Places (58) with 161 new starts and Miscellaneous Retail (59) with 104 new starts. Businesses included under Miscellaneous Retail were drug stores, liquor stores, used merchandise stores, fuel dealers and other miscellaneous stores not classified elsewhere.

Construction (15-17) trailed Retail Trade by one business. 465 new Construction businesses started in 1983 which was 19.2% of the total. Three major groups make up the Construction industry definition: Building Construction-General Contractors and Operative Builders (15), Heavy Construction other than Building Construction-Contractors for Bridges, Tunnels, and Highways (16), Construction-Special Trade Contractors (17).

Building Construction (15) had more new starts in 1983, than any other major group in all the industries, with 217. This was 8.9% of the total 2427 business starts in 1983. Construction-Special Trade Contractors (17) had the second most starts in the construction classification with 186 new starts. This major

group had the second most starts over all the industries with 8% of the total starts in 1983.

Two divisions were the smallest growing areas. Agriculture, Forestry and Fishing (01-09) had only 73 new firms start in 1983 which was 3% of the total. Following close was Mining (10-14) with 79 new starts or 3% of the total in 1983.

The top counties with new starts were also the top counties in population. Yellowstone County had 413 new businesses start in 1983 which was 17% of the total. Almost a fourth of these were in Services with 123.

Two counties did not have any new business starts in 1983. These counties were Golden Valley and Wibaux. Eight counties had less than five, not counting Golden Valley and Wibaux. Another ten had less than ten new businesses. Most of these counties were found in the eastern part of the state where the drought, grasshoppers and the decline of the oil industry had hurt the economy.

The unclassified county (999) had 86 business starts. Many of these were businesses that worked statewide or worked in many counties yet had one unemployment insurance account number.

NEW BUSINESSES IN 1983 BY INDUSTRY AND COUNTY

County (Name)	Cty Code	Total	SIC CODES 01-09	10-14	15-17	20-39	40-49	50-51	52-59	60-67	70-89	99
Beaverhead	001	32	1	3	4	6	1	3	2	1	11	
Big Horn	003	18			5		1		2		10	
Blaine	005	9	2		1		1		2	1	2	
Broadwater	007	12			2	5	2		1		2	
Carbon	009	25	1		4	1			7	1	11	
Carter	001	2		2								
Cascade	013	199	3	3	35	5	11	9	49	14	70	
Choteau	015	10	1		1		1		3		4	
Custer	017	36	2	1	11		1	2	4	5	10	
Daniels	019	7			3				2	1	1	
Dawson	021	32		2	2	1	6	1	7	2	10	1
Deer Lodge	023	20		2	1	3	1	2	3	3	5	
Fallon	025	7			2		1	2	1		1	
Fergus	027	22	4	4	5			2	5	1	1	
Flathead	029	243	9	1	54	25	21	10	57	22	44	
Gallatin	031	184	6	1	42	14	10	13	33	11	54	
Garfield	033	3			1		1			1		
Glacier	035	26	2	2	4	1	1	1	8		7	
Golden Valley	037	0										
Granite	039	8		1	1	2	2		1	1		
Hill	041	37	2		10		1	2	8	1	13	
Jefferson	043	19		3	5		3		4	1	3	
Judith Basin	045	7			1		1	1	2		2	
Lake	047	46	1		12	7	1	1	6	4	13	1
Lewis & Clark	049	140	2	2	30	10	2	5	29	8	52	
Liberty	051	1									1	
Lincoln	053	74	5		14	20	5	1	15	1	13	
McCone	055	5		1	3				1			
Madison	057	22		6	2	1		2	7		4	
Meagher	059	13		3	1	3	1		2		3	
Mineral	061	15			3	5			5	1	1	
Missoula	063	235	10	1	33	19	13	21	44	13	80	1
Musselshell	065	8				1	1	1	2		3	
Park	067	50			7	6	4		12	2	19	
Petroleum	069	1			1							
Phillips	071	8			2		1	1	2	1	1	
Pondera	073	11	1		2			1	2	1	4	
Powder River	075	4					2				2	
Powell	077	13		4			1		4	1	3	
Praire	079	1				1						
Ravalli	081	70	5		13	4	8	3	20	3	14	
Richland	083	28		9	4	1	5	3	1		5	

NEW BUSINESSES IN 1983 BY INDUSTRY AND COUNTY

County (Name)	Cty Code	Total	SIC CODES 01-09	10-14	15-17	20-39	40-49	50-51	52-59	60-67	70-89	99
Roosevelt	085	32	1	5	5		4		9		7	1
Rosebud	087	22	1		9	3	1		1	1	6	
Sanders	089	28			6	4	9		5		4	
Sheridan	091	12		2	5		1	1	1		2	
Silver Bow	093	57		1	7	2	2	5	14	3	22	1
Stillwater	095	17	1		4		2	1	2		6	1
Sweet Grass	097	5	1		1						3	
Teton	099	6	1		1				1	1	2	
Toole	101	18	2	2	4	1	2	1	3	1	2	
Treasure	103	4							2		1	1
Valley	105	23	1		5		2	2	3		10	
Wheatland	107	1								1		
Wibaux	109	0										
Yellowstone	111	413	6	9	75	9	33	51	68	39	123	
Unclassified	999	86	2	9	22	1	12	15	4	1	13	7
Total		2427	73	88	465	161	178	163	466	148	680	14

NEW BUSINESSES IN TOP SIX COUNTIES

The chart below shows the top six counties with new businesses along with the percent of population each county holds and its percent of existing businesses.

COUNTY	NUMBER OF NEW STARTS	% OF TOTAL NEW STARTS	COUNTY POPULATION	PERCENT OF MONTANA'S POPULATION
Yellowstone	413	18	108,035	14
Flathead	243	11	51,966	7
Missoula	235	10	76,016	10
Cascade	199	9	80,969	10
Gallatin	184	8	42,865	5
Lewis & Clark	140	6	43,039	5
TOTALS:	1,414	62	402,890	51

Yellowstone County had the highest percent of population and the highest percent of new business starts. The county had 18% of the new starts in 1983 while holding 14% of the population. Flathead County had 11% of the new business starts while having 7% of the population. Both of these counties show growth possibilities.

Gallatin County also showed signs of a growing economy. While having 5% of the population, the county had 8% of the new business starts in 1983. Estimates of the population change from 1980 to 1988 from the Bureau of the Census shows that Gallatin County had grown by 13%. This may indicate a healthy, growing economy.

Cascade County was the only county in the top six that had a smaller percentage of starts compared to its percentage of population. This could indicate a stagnant economy. Since the 1980 census, estimates of the population from the Bureau of the Census in Cascade County show a decrease of 3% from 1980 to 1988 which corresponds with fewer new business starts.

ACTIVE BUSINESSES IN TOP SIX COUNTIES

Yellowstone County had the most active businesses after five years with 185 (18%). The chart below illustrates the top six counties with new businesses in 1983 and the percentage still alive.

COUNTY	NUMBER OF ACTIVE BUSINESSES	PERCENT IN 1983	PERCENT AFTER 5 YEARS	PLACE IN 1983	PLACE AFTER 5 YRS.
Yellowstone	185	18	18	1	1
Flathead	102	11	10	2	3
Missoula	109	10	11	3	2
Cascade	80	9	8	4	5
Gallatin	96	8	9	5	4
Lewis & Clark	61	6	6	6	6
TOTALS:	633	62	62		

The top six counties had 62% of the new business starts while containing 51% of the population in 1983. After five years, these counties had 62% of the businesses still alive, while having 53% of the population.

Two counties stayed the same in their ranking of percent of business that started in 1983. Yellowstone County had 18% of the business starts in 1983 and after five years still had 18% of the active businesses. This gave Yellowstone County a first place ranking over all the counties. Lewis and Clark County stayed at 6% of the 1983 businesses over five years.

Flathead County lost its second place ranking for its amount of active businesses. After five years, Flathead County was in third place by having 10% of the active businesses from 1983. Missoula County had 10% of the 1983 new businesses but, after five years, was in second place with 11% of the active businesses.

Gallatin County gained in ranking while Cascade County dropped a place in the ranking. Gallatin County had a higher percentage of the 1983 new business starts than the county's percentage of statewide population. Cascade County had a higher percentage of the statewide population than the county's percentage of new business starts in 1983.

To summarize, Yellowstone and Lewis and Clark Counties held constant in their percentage of the businesses that started in 1983 with 18% and 6% which gave them rankings of 1 and 6 respectively. Flathead and Cascade Counties proportionately had fewer active businesses at the end of five years. Missoula and Gallatin County had proportionately more active businesses at the end of the five years than the amount with which they began.

This indicated which counties had a steady economy. The county could have also been well diversified in industries so that one stagnant industry did not seriously hurt the whole economy for the community.

INDUSTRY VITALITY

Another interesting detail is the percentage of business starts each division had, along with the percent of the businesses active after five years. This shows the vitality of each division during a rough, five year period. The chart below gives the number of firms and the percent of total firms each industrial division had.

PERCENT OF 1983 NEW FIRMS BY DIVISION

SIC CODE	NUMBER OF '83 FIRMS	PERCENT OF '83 FIRMS	NUMBER OF FIRMS AFTER 5 YRS	PERCENT OF FIRMS AFTER 5 YRS
01-09	73	3.0	39	3.8
10-14	79	3.3	17	1.6
15-17	465	19.2	143	13.9
20-39	161	6.6	61	5.9
40-49	178	7.3	74	7.2
50-51	163	6.7	67	6.5
52-59	466	19.2	224	21.7
60-67	148	6.1	81	7.8
70-89	680	28.0	326	31.6
99	14	0.6	0	0.0
OVERALL:	2427	100	1032	100

The economy hit Construction the hardest. It began with 19% of the new starts and after five years had 14%. As stated before in this study, this portrays the division as being a risky occupation to launch. Also, the industries such as oil exploration and extraction that many of the Construction businesses worked in hit bad times.

Several of the divisions gained in their percentage of the businesses started in 1983. Services started with 28% of the enterprises in 1983 and had 32% of the new 1983 businesses still alive after five years. Retail Trade went from 19% to 22% of the establishments in five years. Both divisions were a growing part of the economy.

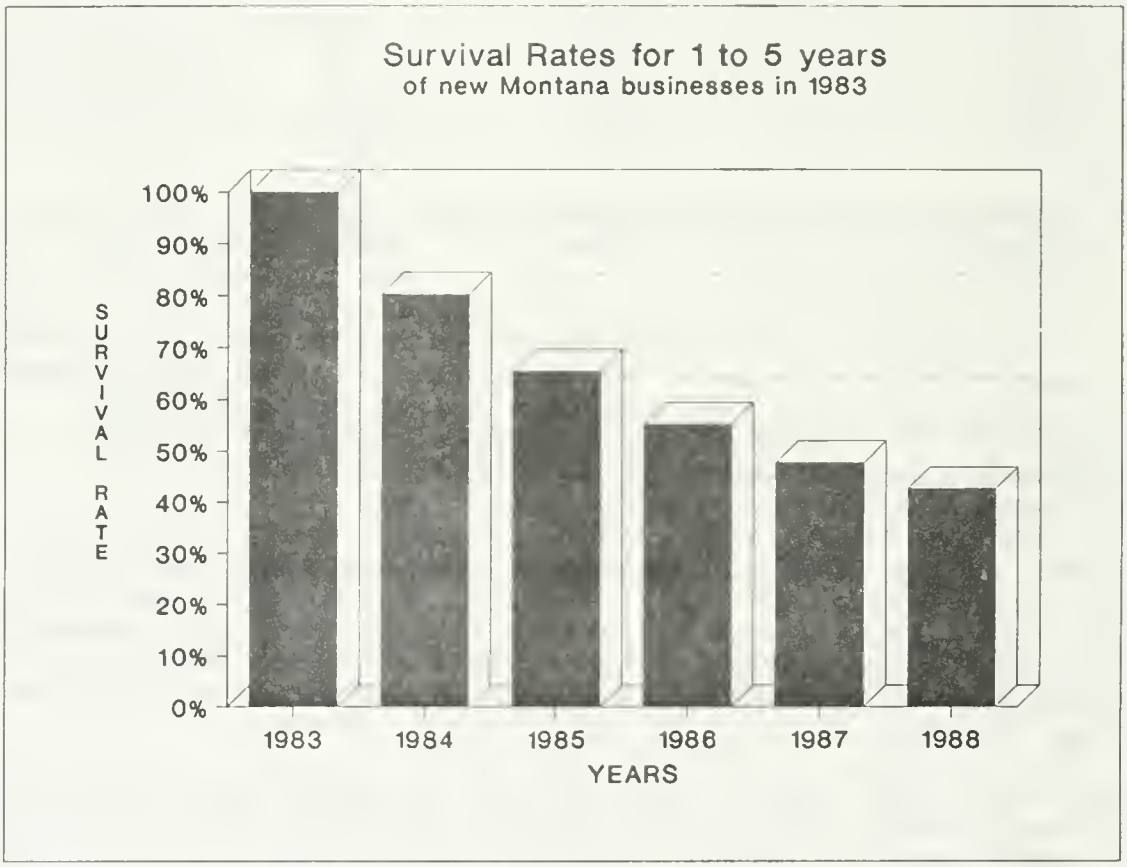
Other divisions showing growth in their percentage of the 1983 new businesses were: Agriculture, Forestry and Fishing (Division A), and Finance, Insurance and Real Estate (Division H). These divisions also proved how resilient they were to the tough economic times Montana encountered in the 1980's by gaining in their proportion of the 1983 new businesses.

Along with Construction, several of the divisions lost ground in their percentage of 1983 new starts. Mining went from 3% of the 1983 new businesses to 2% after five years. Manufacturing dropped from 7% to 6% in five years.

OVERALL SURVIVAL RATE FOR MONTANA

The survival rates for the new 1983 businesses in Montana were:

Survived One Year	-	80%
Survived Two Years	-	65%
Survived Three Years	-	55%
Survived Four Years	-	48%
Survived Five Years	-	43%



Less than half the businesses that embarked in 1983 survived five years. Economic factors affected the estimated survival rates. The collapse of oil exploration and extraction in Montana resulted from low foreign prices. The drought and locusts harmed the over-extended farmer while the logging industry experienced cutbacks. The trucking industry underwent deregulation while a major communications corporation was split.[1]

These are just a few of the incidents that had an impact on the new businesses that started in 1983. After all the adversities the new 1983 establishments underwent the first five years, almost 43% were still alive.

SURVIVAL RATES BY INDUSTRY DIVISION

The following chart displays the survival rates for one to five years for the industry divisions. It also shows the total number of businesses that started in 1983 and the number alive after five years.

SIC CODE	SURVIVAL RATE FOR ___ YEARS ONE	TWO	THREE	FOUR	FIVE	TOTAL # BUSINESSES IN 1983	TOTAL # BUSINESSES AFTER 5 YRS
01-09	86.30	72.60	64.38	58.90	53.42	73	39
10-14	62.03	40.51	32.91	24.05	21.52	79	17
15-17	74.19	56.99	45.16	36.13	30.75	465	141
20-39	80.75	63.98	49.69	43.48	37.89	161	62
40-49	78.09	64.04	57.30	48.31	41.57	178	72
50-51	78.53	63.19	50.92	44.17	41.18	163	67
52-59	85.19	69.96	60.30	53.86	48.87	466	216
60-67	81.76	72.74	64.19	58.78	54.73	148	80
70-89	84.26	70.74	61.03	53.24	47.94	680	322
99	28.57	14.29	0.00	0.00	0.00	14	0
OVERALL	80.30	65.39	55.17	47.71	42.52	2427	1016

*INDUSTRY CODES AND TITLES

01-09	Agriculture, Forestry and Fishing
10-14	Mining
15-17	Construction
20-39	Manufacturing
40-49	Transportation, Communications, and Public Utitlites
50-51	Wholesale Trade
52-59	Retail Trade
60-67	Finance, Insurance and Real Estate
70-89	Services
99	Unclassified

[1] Employment and Wages Annual Average 1988 Department of Labor and Industry.

Two of the divisions had the uppermost five year survival rate. Agriculture, Forestry and Fishing (01-09) and Finance, Insurance and Real Estate (60-67) had 53% and 55% respectively after five years. Both of these are typically high capitalized enterprises that require special training to be successful. Few people jump into these fields unenlightened.

The first division, Agriculture, Forestry and Fishing (01-09) included the following establishments: Crops, Livestock and Animal Specialties, Agricultural Services, and Forestry. The farms or ranches included in the study were the large ones who were subject to the unemployment insurance laws. Ranches of this size can usually withstand the tough times because of diversification and sheer size.

The two major groups that had the worst five year survival rate are Mining (10-14) and Construction (15-17). Both are historically risky industries where there are many boom and bust cycles. Mining consistently had the lowest survival rate for all five years with 22% still active after five years. Construction had 31% alive after five years.

Mining had a tough decade with the closing of the Anaconda Company mines and smelter in Butte and Anaconda. Many of the oil and gas exploration and extraction businesses, especially in Eastern Montana, closed because of poor oil prices. Operation was too expensive with the foreign prices falling.[2]

Looking at the construction industry's total employment for the 1980's explains why the survival rates for the study were so low. The industry experienced a steady decline in employment from 1983 to 1987. This was from large cutbacks of a large industrial employer along with the slowdown in mining and increases in the interest rate.[2]

Retail Trade (52-59) had 466 new business starts in 1983. Construction (15-17) had 465 new business starts. After five years, Retail Trade (52-59) had 216 firms still active while construction had 140 active firms. This demonstrates how much riskier Construction was than Retail Trade.

Services (70-89), the largest division, had survival rates which closely reflected the overall average. Services had slightly more than 25% of the new business starts. By the end of five years, 32% of the active businesses were in Services (70-89).

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[2] Employment and Wages Annual Averages 1988 Montana Department of Labor and Industry.

The industry therefore had a lot of influence on the overall rates.

The Unclassified (99) group was not included in the analysis. This was because the business was reclassified or the account number cancelled because the business was not subject to the unemployment insurance laws.

SURVIVAL RATES BY INDUSTRY GROUP

The following chart contains the one to five year survival rates by the major groups within each SIC division. The starting number of new firms in 1983 and the amount still active after five years are included.

Picking the largest division, Services (70-89), Engineering, Accounting, Research , Management and Related Services (87), a major group within the Services division (70-89), had the highest survival rate. After five years, 79% or 38 out of the initial 48 businesses were still alive. These businesses were highly technical with well educated and skilled workers.

Museums, Art Galleries, and Botanical and Zoological Gardens (84) had a 75% survival rate after five years. There were four initial businesses in 1983. Following close behind was Health Services (80) with a 70% five year survival rate with 80 new starts in 1983. This group requires highly skilled people (doctors, nurses) or a large initial capital outlay (hospitals).

Two major groups Household (88) and Miscellaneous Services (89) had low survival rates of 28% and 27% respectively. Household Services are normally set up to be temporary and a low survival rate was not surprising. The Miscellaneous Services were services not classified elsewhere. These included radio and television announcers, weather forecasters, actuaries, geologist (consulting), and industrial psychologists.

The next largest division was Retail Trade (52-57) with 466 new starts. General Merchandise Stores (53) had the highest five year survival rate at 80% yet the group only had five new starts in 1983. Department stores and variety stores were found in this group.

The largest major group within the Retail Trade division was Eating and Drinking Places (58). The five year rate was 45% which was higher than the average for the state but was the second lowest for the division. The lowest was Home Furniture, Furnishings, and Equipment Stores (57) with 41% of the businesses surviving five or more years.

SURVIVAL RATES CLASSIFIED BY INDUSTRIAL CODE

SIC CODE	SURVIVAL RATE FOR ONE TO FIVE YEARS ONE	TWO	THREE	FOUR	FIVE	Starting # new firms	Amt. alive after 5 yrs
01	100.00	90.91	72.73	72.73	72.73	11.00	8.00
02	91.67	83.33	66.67	58.33	41.67	12.00	5.00
07	90.63	75.00	71.88	65.63	62.50	32.00	20.00
08	70.59	52.94	47.06	41.18	35.29	17.00	6.00
09	0.00	0.00	0.00	0.00	0.00	1.00	0.00
10	51.72	24.14	13.79	13.79	10.34	29.00	3.00
12	100.00	100.00	100.00	100.00	100.00	1.00	1.00
13	64.29	45.24	38.10	23.81	21.43	42.00	9.00
14	85.71	71.43	71.43	57.14	57.14	7.00	4.00
15	72.81	58.53	44.70	34.10	29.03	217.00	63.00
16	67.74	43.55	35.48	33.87	29.03	62.00	18.00
17	77.96	59.68	48.92	39.25	33.33	186.00	62.00
20	87.50	75.00	68.75	62.50	56.25	16.00	9.00
23	100.00	71.43	42.86	42.86	42.86	7.00	3.00
24	80.00	62.22	48.89	42.22	36.67	90.00	33.00
25	66.67	66.67	66.67	66.67	33.33	3.00	1.00
27	72.73	63.64	63.64	45.45	45.45	11.00	5.00
28	100.00	100.00	50.00	50.00	50.00	4.00	2.00
30	60.00	40.00	40.00	20.00	20.00	5.00	1.00
32	100.00	100.00	100.00	100.00	100.00	1.00	1.00
33	75.00	50.00	25.00	25.00	0.00	4.00	0.00
34	100.00	33.33	0.00	0.00	0.00	3.00	0.00
35	71.43	71.43	57.14	57.14	42.86	7.00	3.00
36	100.00	100.00	0.00	0.00	0.00	1.00	0.00
37	100.00	66.67	66.67	66.67	66.67	3.00	2.00
38	100.00	100.00	33.33	33.33	33.33	3.00	1.00
39	33.33	0.00	0.00	0.00	0.00	3.00	0.00
41	50.00	50.00	50.00	50.00	50.00	2.00	1.00
42	77.95	61.42	55.91	45.67	36.22	127.00	46.00
43	100.00	100.00	0.00	0.00	0.00	1.00	0.00
45	78.57	57.14	35.71	28.57	28.57	14.00	4.00
47	72.73	72.73	72.73	63.64	63.64	11.00	7.00
48	86.67	80.00	73.33	66.67	66.67	15.00	10.00
49	75.00	75.00	75.00	75.00	75.00	8.00	6.00
50	81.55	63.11	50.49	41.75	38.83	103.00	40.00
51	73.33	63.33	51.67	48.33	45.00	60.00	27.00
52	80.00	68.00	56.00	52.00	48.00	25.00	12.00
53	100.00	100.00	100.00	80.00	80.00	5.00	4.00
54	85.37	65.85	60.98	58.54	53.66	41.00	22.00
55	82.93	75.61	63.41	56.10	56.10	41.00	23.00
56	100.00	85.71	71.43	71.43	54.29	35.00	19.00
57	85.19	66.67	55.56	50.00	40.74	54.00	22.00
58	81.37	67.08	57.14	49.69	45.34	161.00	73.00

SURVIVAL RATES CLASSIFIED BY INDUSTRIAL CODE

SIC CODE	SURVIVAL RATE FOR ONE TO FIVE YEARS ONE	TWO	THREE	FOUR	FIVE	Starting # new firms	Amt. alive after 5 yrs
59	87.50	69.23	61.54	52.88	47.12	104.00	49.00
60	100.00	100.00	100.00	66.67	66.67	3.00	2.00
61	88.89	88.89	88.89	88.89	88.89	9.00	8.00
62	66.67	66.67	66.67	66.67	50.00	6.00	3.00
63	85.71	85.71	85.71	85.71	85.71	7.00	6.00
64	89.36	82.98	70.21	63.83	59.57	47.00	28.00
65	80.60	67.16	56.72	50.75	46.27	67.00	31.00
67	44.44	33.33	33.33	33.33	33.33	9.00	3.00
70	88.89	77.78	77.78	66.67	44.44	18.00	8.00
72	75.86	67.24	55.17	48.28	41.38	58.00	24.00
73	82.17	62.02	50.39	35.66	34.11	129.00	44.00
75	72.41	58.62	50.00	37.93	36.21	58.00	21.00
76	85.71	65.71	51.43	45.71	31.43	35.00	11.00
78	90.91	90.91	81.82	81.82	63.64	11.00	7.00
79	79.55	68.18	59.09	56.82	50.00	44.00	22.00
80	90.00	83.75	77.50	76.25	70.00	80.00	56.00
81	90.24	82.93	73.17	68.29	65.85	41.00	27.00
82	85.71	85.71	71.43	71.43	71.43	7.00	5.00
83	82.22	68.89	66.67	60.00	51.11	45.00	23.00
84	100.00	75.00	75.00	75.00	75.00	4.00	3.00
86	100.00	86.36	72.73	72.73	68.18	22.00	15.00
87	97.92	95.83	93.75	83.33	79.17	48.00	38.00
88	81.48	57.41	38.89	29.63	27.78	54.00	15.00
89	80.77	53.85	38.46	30.77	26.92	26.00	7
99	28.57	14.29	0	0	0	14.00	0
Overall:	80.3	65.39	55.17	47.71	42.52	2427	1032

*INDUSTRY CODES AND TITLES

01-09	Agriculture, Forestry and Fishing
10-14	Mining
15-17	Construction
20-39	Manufacturing
40-49	Transportation, Communications, and Public Utitlites
50-51	Wholesale Trade
52-59	Retail Trade
60-67	Finance, Insurance and Real Estate
70-89	Services
99	Unclassified

Construction (15-17) consisted of three major groups. Two of these groups were the largest in the number of starts of all the major groups. All three of the groups had low survival rates. Building Construction (15) and Heavy Construction other than Building Construction (16) each had a five year survival rate of 29%. Special Trade Contractors (17) had a 33% survival rate after five years.

ANALYSIS OF SIX MAJOR INDUSTRY GROUPS

At the request of the Department of Commerce, six major groups listed within three divisions were examined. These major groups were:

Division D - Manufacturing

- Major Group 20: Food and Kindred Products
- Major Group 24: Lumber and Wood Products, except Furniture
- Major Group 25: Furniture and Fixtures
- Major Group 34: Fabricated Metal Products, except Machinery and Transportation Equipment

Division G - Retail Trade

- Major Group 58: Eating and Drinking Places

Division I - Services

- Major Group 70: Hotels, Rooming Houses, Camps, and other Lodging Places

The following chart shows the major group and its survival rates. The chart also shows the number of starting businesses in 1983 and the number of the starting businesses that were still alive after five years.

MAJOR GROUP	SURVIVAL RATE FOR ONE TO FIVE YEARS					# STARTS IN 1983	# AFTER 5 YEARS
	ONE	TWO	THREE	FOUR	FIVE		
20	87.50	75.00	68.75	62.50	56.25	16	9
24	80.00	62.22	48.89	42.22	36.67	90	33
25	66.67	66.67	66.67	66.67	33.33	3	1
34	100.00	33.33	0	0	0	3	0
58	81.37	67.08	57.14	49.69	45.34	161	73
70	88.89	77.78	77.78	66.67	44.44	18	8

The first major group, Food and Kindred Products (20) had the highest survival rate after five years with 56%. This major group and Hotels, Rooming Houses, Camps, and other Lodging Places (70) were similar in their survival rates. They each had 18 new starts in 1983.

Two of the major groups had such a small sample of new starts in 1983, their results were not good estimates for future reference. Furniture and Fixtures (25) had three new starts in 1983. By the end of the five year period, only one business was still alive.

Fabricated Metal Products, except Machinery and Transportation Equipment (34) also had three starts in 1983. After five years elapsed, not one of these businesses was alive. Although, all three of them were open through the first year.

Lumber and Wood Products, except Furniture (24) had 90 new starts in 1983. The survival rates for this major group throughout the first five year period were a little below the overall Montana rates for each year. One of the reasons for the lower survival rates was the cutback in the lumber industry.[3]

Eating and Drinking Places (58) had 161 new starts in 1983. This was 7% of the total new starts in 1983. The survival rates for the Eating and Drinking Places (58) were two to three percentage points above the overall state survival rates. The rates are trustworthy because of the number of businesses involved in the calculation.

SURVIVAL RATES BY COUNTY

The following chart depicts the survival rates for each county. It shows the county name, county code used by the Research and Analysis Bureau, survival rates for one to five years and the number of firms who started in each county in 1983. Below the county data, there are survival rates for one to five years for all of the new businesses started in 1983 in Montana.

Two counties had survival rates of 100% for all five years. However, these were deceiving figures because each county had only one business start. The survival rates were not an accurate estimate of how an average business will do if it opens in Wheatland or Liberty Counties. The larger the sample was, the more likely the survival rates were accurate.

Yellowstone County had the most new business starts in 1983 and had survival rates for one to five years that were most like the

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[3] Employment and Wages Annual Average 1988 Department of Labor and Industry.

overall survival rates for the state. Because the number of Yellowstone County new business starts was so large, it had a lot of influence on the results for the state.

Toole County had eighteen businesses start in 1983 and thirteen alive five years later. This was a 72% survival rate which was substantially more than the state average of 42%. Unlike the counties with 100% survival rates, Toole County had a large amount of starts. The new businesses were diversified among the different industries indicating a healthy economy for the county.

Lincoln County had 74 new business starts in 1983. Only 30% of these survived through five years or 22 establishments were still open. Most of the businesses that closed were in Construction, Retail Trade, Manufacturing and Services, the top four divisions in which new businesses opened.

Custer County had 36 new starts in 1983 with 28% of them surviving through five years. Most of the deaths were in the two divisions that had the most starts, Construction and Retail Trade. All the starts in Agriculture, Forestry and Fishing (Division A), Mining (Division B), and Transportation, Communications and Public Utilities (Division E) had closed before the first five years had passed.

Roosevelt County also experienced a tough five years with 28% of the 32 new businesses surviving the first five years. All five of the Construction businesses closed. The other divisions hit hard were Transportation, Communication, and Public Utilities (Division E) and Services (Division I).

ONE TO FIVE YEAR SURVIVAL RATES BY COUNTY

COUNTY	CTY CODE	SURVIVAL RATES FOR ___ YEARS(S) ONE	TWO	THREE	FOUR	FIVE	# OF STARTING FIRMS
Beaverhead	001	75.00	56.25	53.13	53.13	43.75	32
Big Horn	003	72.22	44.44	38.89	38.89	33.33	18
Blaine	005	100.00	77.78	77.78	55.56	55.56	9
Broadwater	007	91.67	83.33	66.67	58.33	58.33	12
Carbon	009	88.00	72.00	64.00	52.00	40.00	25
Carter	011	50.00	50.00	50.00	50.00	50.00	2
Cascade	013	82.41	69.85	55.78	47.24	41.21	199
Choteau	015	90.00	70.00	50.00	30.00	30.00	10
Custer	017	75.00	52.78	33.33	30.56	27.78	36
Daniels	019	85.71	71.43	71.43	57.14	42.86	7
Dawson	021	81.25	56.25	50.00	50.00	43.75	32
Deer Lodge	023	85.00	60.00	60.00	40.00	40.00	20
Fallon	025	85.71	85.71	71.43	57.14	57.14	7
Fergus	027	68.18	54.55	36.36	31.82	31.82	22
Flathead	029	77.78	62.14	53.91	48.97	42.39	243
Gallatin	031	83.15	71.74	63.59	55.43	52.17	184
Garfield	033	66.67	66.67	66.67	66.67	33.33	3
Glacier	035	80.77	61.54	53.85	50.00	42.31	26
Golden Valley	037	0.00	0.00	0.00	0.00	0.00	0
Granite	039	62.50	62.50	62.50	62.50	62.50	8
Hill	041	94.59	78.38	72.97	62.16	59.46	37
Jefferson	043	57.89	52.63	47.37	31.58	26.32	19
Judith Basin	045	100.00	100.00	71.43	42.86	42.86	7
Lake	047	78.26	63.04	50.00	43.48	36.96	46
Lewis & Clark	049	80.71	65.00	57.14	50.00	44.29	140
Liberty	051	100.00	100.00	100.00	100.00	100.00	1
Lincoln	053	77.03	59.46	44.59	36.49	29.73	74
McCone	055	80.00	60.00	40.00	40.00	40.00	5
Madison	057	54.55	45.45	40.91	36.36	27.27	22
Meagher	059	61.54	30.77	30.77	23.08	23.08	13
Mineral	061	80.00	60.00	53.33	33.33	33.33	15
Missoula	063	83.76	69.79	58.30	52.77	47.23	235
Musselshell	065	75.00	62.50	50.00	50.00	50.00	8
Park	067	86.00	62.00	60.00	56.00	50.00	50
Petroleum	069	100.00	0.00	0.00	0.00	0.00	1
Phillips	071	87.50	62.50	37.50	12.50	12.50	8
Pondera	073	72.73	63.64	45.45	36.36	36.36	11
Powder River	075	75.00	50.00	50.00	50.00	25.00	4
Powell	077	84.62	61.54	46.15	38.46	38.46	13
Praire	079	100.00	100.00	0.00	0.00	0.00	1
Ravalli	081	78.57	57.14	47.14	38.57	35.71	70
Richland	083	64.29	53.57	42.86	28.57	28.57	28

ONE TO FIVE YEAR SURVIVAL RATES BY COUNTY

COUNTY	CTY CODE	SURVIVAL RATES FOR ___ YEARS(S) ONE	TWO	THREE	FOUR	FIVE	# OF STARTING FIRMS
Roosevelt	085	71.88	59.38	46.88	34.38	28.13	32
Rosebud	087	59.09	40.91	31.82	22.73	18.18	22
Sanders	089	67.89	57.14	46.43	39.29	35.71	28
Sheridan	091	91.67	75.00	66.67	58.33	41.67	12
Silver Bow	093	87.72	78.95	63.16	57.89	52.63	57
Stillwater	095	76.47	70.59	47.06	41.18	41.18	17
Sweet Grass	097	80.00	80.00	60.00	60.00	40.00	5
Teton	099	100.00	100.00	83.33	83.33	66.67	6
Toole	101	94.44	88.89	83.33	77.78	72.22	18
Treasure	103	75.00	75.00	75.00	50.00	50.00	4
Valley	105	86.96	82.61	60.87	52.17	39.13	23
Wheatland	107	100.00	100.00	100.00	100.00	100.00	1
Wibaux	109	0.00	0.00	0.00	0.00	0.00	0
Yellowstone	111	83.54	68.52	58.84	50.61	45.04	413
Unclassified	999	67.44	51.16	41.86	33.72	32.56	86
OVERALL RATES:		80.30	65.39	55.17	47.71	42.52	2427

ANALYSIS OF EDUCATION AND EXPERIENCE

The researchers sent questionnaires to inactive and active accounts. The average inactive business was compared to the average active business to detect any differences. The last four questions on the questionnaire dealt with the education, experience and type of financial support each employer had before opening their new business.

One major difference between the two questionnaires was question number one. The first part of the study explained the difference between the first question on each questionnaire. Another difference was question number five on the active businesses' questionnaires. We asked for the most helpful and least helpful training or programs. This question was not on the inactive businesses' questionnaire.

The respondents did not always fill out the questionnaire completely. Some owners listed the type of loans they had along with the interest rate, but did not complete the repayment schedule portion. Others filled out the repayment schedule without completing the interest rate portion. This led to information that was not always consistent. The researchers did not analyze some areas in-depth due to small sample size.

The two tables on the next page show the amount of questionnaires received from the employers. The tables also show the responses to the second and third questions. The charts tabulate the 225 completed questionnaires from establishments with a cancelled unemployment insurance account number. The results also show the 348 completed questionnaires from businesses with an active unemployment insurance account number.

After compiling the results from the first question, the researchers separated the questionnaires into two groups. The first being the open (active) businesses and the second group being the closed (inactive) businesses. There were 378 open businesses and 129 closed businesses in the database used for the next phase in the study.

ACTIVE OR CLOSED	APPRENTICE		WORKED IN SIMILAR BUSINESS		OWNED A SIMILAR BUSINESS		TOTAL NUMBER OF BUSINESSES
ACTIVE	10.1%	(38)	55.3%	(209)	12.4%	(47)	378
CLOSED	13.2%	(17)	48.8%	(163)	18.6%	(24)	129
TOTAL	10.9%	(55)	41.2%	(372)	14%	(71)	507

OPEN OR CLOSED	VO-TECH	GRADUATE FROM VO-TECH	TWO-YEAR COLLEGE	TWO-YEAR COLLEGE GRADUATE	COLLEGE	COLLEGE GRADUATE	TOTAL
OPEN(#)	11	9	28	16	231	178	378
OPEN(%)	2.9%	2.4%	7.4%	4.2%	61.1%	47.1%	
CLOSED(#)	13	9	12	11	64	52	129
CLOSED(%)	10.1%	7%	9.3%	8.5%	49.6%	40.3%	
TOTAL(#)	24	18	40	27	295	230	507
TOTAL(%)	4.78%	3.6%	8%	5.4%	58.8%	45.8%	

The active businesses had a higher percentage of owners who had worked in a similar business before owning their firm. The closed businesses had a higher percentage that had been an apprentice or had owned a similar business before starting their new establishment in 1983.

Overall, 11% of the employers had been an apprentice prior to opening a business in 1983. Forty-one percent of the proprietors worked in a similar business while 14% had owned a similar business before starting the new business.

The second chart contains the level of education. The top two rows show the number and the percent of the open businesses whose owners had received the specified training starting the business in 1983. The next two rows display the number and the percent of closed businesses whose owners had the specified training.

The proprietors of the closed businesses had a higher percentage of education from the Vo-Techs and two-year colleges. The open businesses had a higher percentage of owners with a college background. The open businesses also had a higher percentage of owners who were college graduates.

Only 5% and 8% of the employers had attended Vo-Tech or a two-year college respectfully. However, 59% of the proprietors had attended college. The open businesses had 61% of their owners with college training prior to opening the business while the closed businesses had 50% with college training.

Part of the higher rate of college background in the open businesses was attributable to the professional training some occupations require such as, the amount of schooling needed to become a doctor or a lawyer. Once established within a community, they were very unlikely to move. There was also a strong demand for these highly trained individuals. Therefore it was unusual for these enterprises not to be open for a long time.

STATISTICAL TESTS ON THE AMOUNT OF EXPERIENCE AND EDUCATION

The following page shows the statistical tests calculated to find a result relative to the hypothesis. The hypothesis asked whether there was a significant difference in the proportion of OPEN businesses compared to the proportion of CLOSED businesses in the amount of education or experience their proprietors had incurred before starting the business.

In the top chart, we listed the types of training and the corresponding percent of owners who received training before starting the business. The fourth column, labelled total percent P (%) was the number of open businesses plus the number of closed businesses that had training. The last four columns checked the amount of responses to make sure there was a large enough sample to justify the tests. Otherwise the results were not significant and had little meaning.

The only group that had too small of a sample was the Vo-Tech graduates. This section was not analyzed. The rest of the groups were tested at a 98% level of significance.

The bottom chart shows the calculated test statistic and the table value. If the test statistic was greater than the table value, the null hypothesis was rejected. The null hypothesis was accepted if the test statistic was less then the table value. When we accepted the null hypothesis, it meant the training had little bearing on whether the business stayed open or closed during the past five years.

The only significant difference found was in the businesses whose owners received Vo-Tech training before starting their business. This did not mean they graduated from a Vo-Tech school, only that they had completed some coursework. People who had Vo-Tech training were more likely to have a business that closed within five years as opposed to those people who attended college.

The hypothesis of each of the calculations is the same:
Whether the proportion of the OPEN businesses is significantly different from the CLOSED businesses in the amount of education or experience their proprietors had incurred prior to starting the NEW business in 1983.

$H_0: \pi_1 - \pi_2 = 0$
$H_1: \pi_1 - \pi_2 \neq 0$

Where π_1 and π_2 are equal to the actual population proportion of experience (apprentice, worked in or owned similar businesses) or education (Vo-Tech, Two-Year College and college whether they are graduates from these schools.)

TYPE OF TRAINING	% OF OPEN BUS p_1	% OF CLOSED p_2	TOTAL PERCENT P (%)	IS $n_1P > 5$ (ANSWER)	IS $n_1(1-P)>5$ (ANSWER)	IS $n_2P > 5$ (ANSWER)	IS $n_2(1-P)>5$ (ANSWER)
APPRENTICE	10.1	13.2	10.9	41 YES	33 YES	14 YES	115 YES
WORKED IN	55.3	48.8	41.2	41 YES	40 YES	14 YES	13 YES
OWNED SIM	12.4	18.6	14.0	53 YES	325 YES	18 YES	17 YES
VO-TECH	2.9	10.1	4.8	18 YES	359 YES	6 YES	123 YES
GRADUATE?	2.4	7.0	3.6	14 YES	364 YES	4.6 NO	124 YES
2-YR COLLEG	7.4	9.3	8.0	30 YES	348 YES	10 YES	118 YES
GRADUATE?	4.2	8.5	5.4	20 YES	358 YES	7 YES	122 YES
COLLEGE	61.1	49.6	58.8	222 YES	156 YES	76 YES	53 YES
GRADUATE?	47.1	40.3	45.8	173 YES	204 YES	59 YES	70 YES

For each category, a Test Statistic is calculated and compared to the Table value at a 98% level of significance. With $n_1 = 378$ and $n_2 = 129$.

The formula is $$Z^* = \frac{(p_1 - p_2)}{\sqrt{P(1-P)\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

TRAINING CATEGORY	Z*	TABLE VALUE	REJECT/ ACCEPT	RESULTS
APPRENTICE	-0.976	2.326	Accept	No significant difference
WORKED IN	1.295	2.326	Accept	No significant difference
OWNED SIM	1.752	2.326	Accept	No significant difference
VO-TECH	3.310	2.326	Reject	Significant Difference
GRADUATE?		Not a large enough sample to analyze		
2-YR COLL.	-0.687	2.326	Accept	No significant difference
GRADUATE?	1.866	2.326	Accept	No significant difference
COLLEGE	2.290	2.326	Accept	No significant difference
GRADUATE?	1.338	2.326	Accept	No significant difference

OUTSIDE FUNDING SOURCES

The researchers separated the funding sources into six different classes of funding. The groups were: banks, Small Business Association (SBA), family/friend, other government programs, internally generated funds, and other loans. Personal assets was also a separate category that will be examined in detail later in the study.

The table below shows the types of funding used and the number and percent of the open and closed businesses who used them. The last two columns give the total number and percentage of the businesses who used each type of funding source.

FINANCING TYPE	BUSINESSES: OPEN #	% (p_1)	CLOSED #	% (p_2)	TOTAL: #	% (P)
BANK	150	46.8%	54	49.1%	204	47.3%
SBA	37	11.5%	4	3.6%	41	9.5%
FAMILY/FRIEND	81	25.2%	30	27.3%	111	25.8%
OTHER GOV'T	11	3.4%	1	0.9%	12	2.8%
INTERNAL FUNDS	9	2.8%	1	0.9%	10	2.3%
OTHER	33	10.3%	20	18.2%	53	12.3%
TOTAL	321	100%	110	100%	431	100%

Most of the businesses received loans from banks. The researchers grouped all loans that came from a financial institution into the bank category. This included loans from credit unions, mortgage companies and insurance policies. The business owners who completed the survey listed most of their loans as bank loans.

The next largest source was loans from family or friends. Most of the surveyed businesses that marked that they received help from family or friends did not include information on the term of repayment or interest rates. Therefore, this category was not examined in as much detail as some of the others.

The next two largest groups were loans from the SBA and other loans. There were a much larger amount of SBA loans to the active businesses than the inactive businesses. This indicated the SBA loans were helpful to the new business starts.

The financing source labelled 'other' was a conglomeration of loans that did not fit anywhere else. These included loans from a parent company, insurance company, and loans from a previous owner, if the business had sold after 1983. Also included were the loans not specified by the owner when filling out the questionnaire.

STATISTICAL TESTS ON OUTSIDE FUNDING SOURCES

The next page contains the information on the types of loans with statistical tests applied to the data. The object of the tests was to determine if the source of funds the business acquired had any statistical affect on whether an establishment stayed alive for five years.

Two of the sources did not have large enough sample sizes to warrant an analysis. These were 'other government' programs and 'other loans.'

Only one source of funding had a significant impact on whether a business was open after five years. The SBA loans typically had lower interest rates with a longer period to repay the loan. The statistics indicated the SBA was conducive to the new establishments staying in business beyond five years.

Loans from banks, family/friends and internally generated funds did not display any significant impacts. There was little impact on whether a business stayed open five years if the owner received loans from banks or family or friends. However, there was some impact on using internally generated funds rather than taking out a loan to expand, although not a significant impact.

The hypothesis tested here is whether there is a difference in the outside funding source between an open business and a business that closed within five years of starting. Where π_1 and π_2 are population proportions.

$$H_0 : \pi_1 - \pi_2 = 0$$
$$H_1 : \pi_1 - \pi_2 \neq 0$$

The charts on the prior pages shows the percent of open and closed businesses that used these sources. A test statistic was calculated to test for a significant difference between the proportions.

The first chart is determining whether there is large enough sample to run the statistical test on each source.

FUNDING SOURCE	$n_1(1-p)>5$	$n_1(p)>5$	$n_2(1-p)>5$	$n_2(p)>5$	SAMPLE SIZE?
BANK	169	152	58	52	YES
FAMILY/FRIEND	30	291	10	100	YES
SBA	238	83	82	28	YES
OTHER	312	9	107	3	NO
OTHER GOV'T	314	7	107	3	NO
INTERNAL	282	39	96	14	YES

The formula for the test statistic is :

$$Z^* = \frac{p_1 - p_2}{\sqrt{P(1-P)\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

These are tested at the 98% level for errors.

Table Value Z=2.326

FUNDING SOURCE	TEST STAT Z*	ACCEPT/ REJECT	RESULTS:
BANK	-0.417	ACCEPT	No significant difference
FAMILY/FRIEND	-0.434	ACCEPT	No significant difference
SBA	2.44	REJECT	Significant difference
OTHER	NOT A LARGE ENOUGH SAMPLE		
OTHER GOV'T	NOT A LARGE ENOUGH SAMPLE		
INTERNAL	-2.18	ACCEPT	No significant difference

REPAYMENT SCHEDULE

The term of repayment was the required time to repay the loan received. The repayment schedules were grouped into four classifications: one to three years; four to six years; seven to nine years and; ten years and above. The chart below shows the number of loans within each category.

REPAY. LEVEL	ACTIVE NUMBER	ACTIVE PERCENT	INACTIVE NUMBER	INACTIVE PERCENT	TOTAL NUMBER	TOTAL PERCENT
1-3 YEARS	26	29	9	24	35	27
4-6 YEARS	13	14	10	26	23	18
7-9 YEARS	7	8	6	16	13	10
10 & ABOVE	44	49	13	34	57	45
TOTALS	90	100	38	100	128	100

The groups with the most members for the active businesses and the total businesses were: 1-3 years and 10 and above . In the inactive or closed businesses, the groups 4-6 years and 10 and above were the two highest.

The following page contains the statistics run on the repayment schedule information. The researchers first determined if the sample size was large enough to derive information about the population proportions. The interval of seven to nine years did not have a large enough sample to run the statistics on the percents. The other three classes were large enough to run the tests.

For the ones that were large enough, the researchers calculated a test statistic comparing an open business against a closed business. This was to determine if the amount of time to repay the loans made any difference in the survival of the business.

All three of the calculated test-statistics were not large enough to reject the null hypothesis. Thus, there was not a significant difference between the amount of time given to repay a loan and whether the business was open after five years.

The hypothesis tested here is whether there is a difference in the amount of time allotted for repaying the loan between an open business and one that closed within five years of starting. Where π_1 and π_2 are the population proportions being tested.

$n_1 = 248$ and $n_2 = 80$

$H_0 : \pi_1 - \pi_2 = 0$

$H_1 : \pi_1 - \pi_2 \neq 0$

The charts on the prior pages shows the percent of open and closed businesses that used each repayment level. A test statistic is calculated to test for a significant difference.

The first chart is determining whether there is large enough sample to run the statistical test on each source.

REPAYMENT LEVEL	$n_1(1-p)>5$	$n_1(p)>5$	$n_2(1-p)>5$	$n_2(p)>5$	SAMPLE SIZE?
1-3 YRS	65	25	25	10	YES
4-6 YRS	74	16	31	7	YES
7-9 YRS	80	10	34	4	NO
10 & ABOVE	50	40	21	17	YES

The formula for the test statistic is :

$$Z^* = \frac{p_1 - p_2}{\sqrt{P(1-P)\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

These are tested at the 98% level of significance.

Table Value = 2.33

REPAYMENT LEVEL	TEST STAT Z*	ACCEPT/ REJECT	RESULTS:
1-3 YRS	0.603	ACCEPT	No significant difference
4-6 YRS	1.6	ACCEPT	No significant difference
7-9 YRS	NOT A LARGE ENOUGH SAMPLE		
10 & ABOVE	1.52	ACCEPT	No significant difference

INTEREST RATE

The chart below illustrates the average interest rate for each type of loan that the employer(s) paid. The table also displays the standard deviation.

TYPE OF LOAN	ACTIVE BUSINESSES: AVERAGE INTEREST	STANDARD DEVIATION	NUMBER n_1	CLOSED BUSINESSES: AVERAGE INTEREST	STANDARD DEVIATION	NUMBER n_2
Bank	12.2	2.00	82	12.61	2.7	29
SBA	11.9	1.89	18	10.58	1.78	3
Other	10.1	2.49	13	9.33	2.22	12
Fam/friend	11.5	2.60	4	----	----	----

On the following page is the statistical analysis of the interest rate data and the results of the testing. The tests determined if the interest rate charged for each type of loan had a significant difference on the survival of the new business.

Only three of the six types of loans were analyzed. They were bank, SBA, and 'other.' The other three either had no members or too small of a sample to justify running a statistical test.

The analysis compared the active businesses' average interest rate to the inactive businesses' average interest rate for each of the three types of loans. They are tested at the 98% level of significance. The table gives the results of the probe.

The interest rate was not significantly larger for a closed business than for one still open. This held true for all three types of loans evaluated: bank, SBA, and 'other' loans.

The hypothesis tested here is that the interest rate had a lot to do with whether the 1983 new business survived at least five years. Each type of loan (bank, SBA, etc.) is separated into two groups; open and closed businesses. The average interest rate is calculated along with its standard deviation.

$H_0 : \mu_1 = \mu_2$ $\quad \alpha = .01$ Tested at a level of
$H_1 : \mu_1 \neq \mu_2$ significance = 98%.

Where μ_1 is the average interest rate for the open business and μ_2 is the average interest rate for the closed business. The formula for the test statistic when n > 30 is:

$$Z^* = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

If the test statistic > the Table Value, we REJECT the null hypothesis. Otherwise we ACCEPT the null.

If n < 30, then the test statistic is:

$$Z^* = \frac{\bar{x}_1 - \bar{x}_2}{S_p\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \qquad \text{where: } S_p = \sqrt{\frac{(n_1 - 1)s_1 + (n_2 - 1)s_2}{n_1 + n_2 - 2}}$$

and the degrees of freedom (df) are:

$$df = n_1 + n_2 - 2$$

TYPE OF LOAN	DF	TABLE VALUE	TEST STAT	ACCEPT/ REJECT	RESULT
Bank	111	2.33	-0.75	Accept	No significant difference
SBA	19	2.54	1.13	Accept	No significant difference
Other	23	2.50	0.82	Accept	No significant difference

The rest of the categories either had no members or too few to justify running the statisical test.

INTEREST BETWEEN TYPES OF LOANS

Another hypothesis examined was whether there was a difference in the interest rate charged by each type of loan. Once again only three of the types of loans had a large enough sample to be analyzed. The three loans were bank, SBA, and 'other'.

The average interest rate for each type of loan was compared to the average interest rate for the other two types of loans. The tests were at the 98% level of confidence.

The top chart gives the average interest rate, standard deviation and number of businesses for each type of loan. This was the general information upon which the tests were run. The bottom chart gives the results of the tests.

There was a significant difference in the average interest rate of 'other' loans compared to bank and SBA loans. The average interest rate was significantly smaller for the 'other' loans. 'Other' loans was a broad range that included insurance policies, borrowing on retirement funds and other typically low interest loans. The test results were not conclusive.

The ideal test would have been to break down the 'other' loans category into the separate types of loans and compares each of these average interest rates against bank and SBA interest rates. However, there would not have been large enough samples to justify the results for the study. Therefore, the category was not separated.

There was not a significant difference between a bank loan and a loan backed by SBA.

The tested hypothesis is that there is a difference in the interest rate between the different types of loans. Each type of loan is examined against another type of loan's average interest rate to determine if they are significantly different.

TYPE OF LOAN	AVERAGE INTEREST	STANDARD DEVIATION	NUMBER n
Bank	12.30	2.22	111
SBA	11.72	1.93	21
Other	9.74	2.40	25

$H_0 : \mu_1 = \mu_2$
$H_1 : \mu_1 \neq \mu_2$

Tested at a level of significance = 98%
$\alpha = .02$

Where the are the average interest rate for each loan type.
The formula for the test statistic is; (since they have n>30)

$$Z^* = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

If the test statistic is > the table value, we REJECT the null hypothesis (H_0). Otherwise we ACCEPT the null.

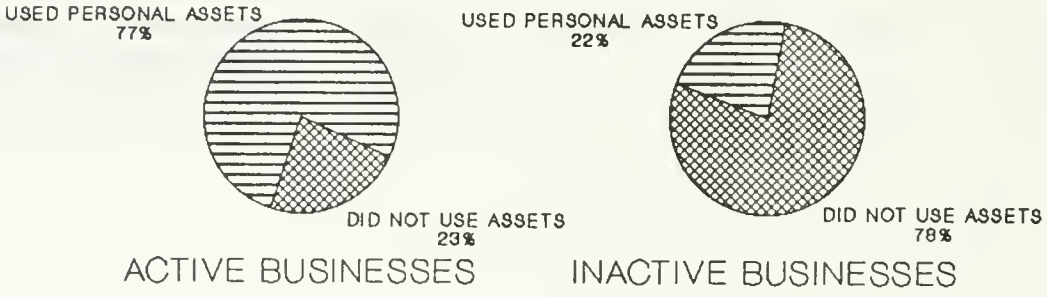
COMPARISON GROUPS:	DF	TABLE VALUE	TEST STATISTIC	ACCEPT/ REJECT	RESULT:
Bank/SBA	132	2.33	1.23	ACCEPT	NO SIGNIF. DIFFERENCE
Bank/Other	136	2.33	4.88	REJECT	Significant Difference
SBA/Other	46	2.33	3.10	REJECT	Significant Difference

PERSONAL ASSETS

The final source of financing the new 1983 businesses discussed in this study was whether or not the proprietors used personal assets to start the business. Personal assets were not included in the other analyses because it was unlikely that someone would charge themselves interest or set a certain period for repayment.

Of the open businesses who completed the questionnaire, 77% marked that they used personal assets to get started. Meanwhile, only 22% of the closed firms stated they used personal assets to finance the new businesses. This indicated that the proprietors who used their personal assets had a greater chance of surviving through the first five years.

PERSONAL ASSETS



ADDITIONAL COMMENTS

The final question on the questionnaires left room for any remarks the owners wanted to make. Eight percent of the employers wrote comments on the questionnaire. Their comments are grouped into three areas.

Forty-three percent of the owners stated that some of Montana's laws were tough on the small business. The amount of paperwork required was overwhelming to a number of them. They also expressed concern about the unemployment insurance and workers compensation rates being too high for a small establishment.

Thirty percent of the employers expressed that the local economy had deteriorated to the point where it was almost impossible to stay open. A community that depended primarily on one industry was vulnerable to that industry's ups and downs. When the industry experienced serious cutbacks such as in lumber or mining, the whole community suffered.

Another concern of 27% of the employers who wrote comments was the lack of government programs to help some of the businesses get started. The programs that were around were too restrictive or only helped out certain industries. The amount of paperwork from the government programs deterred many proprietors from filing for help.

APPENDICES

Department of Labor and Industry

Research and Analysis Bureau
P.O. Box 1728
Helena, MT 59624

Toll-free in-state 1-800-633-0229
Out-of-state 1-800-541-3904
Local 444-2430

1. Mark an 'X' by the reason your Montana unemployment insurance account was canelled.

___ Business closure (for any reason other than transfer of ownership)
Month and Year of closure _____

___ Business has reorganized or has had a transfer of ownership (ie. sold, incorporated).
Name of business if changed _____ Name of new owner _____

___ Business is still operating, but all covered employees are laid off and therefore the business is not currently liable for unemployment insurance.
Is this situation (circle one): temporary/seasonal permanent

___ Business is still operating (with employees), and reason for unemployment insurance account cancellation is unknown.

___Other (please specify) _____

2. Mark an 'X' beside the training you received before starting your business.

A. Prior experience:

___Apprentice ___Worked in similar business
___Owned similar business ___Other (please specify) _____

B. Education:

___1. Vo-Tech ..... Did you graduate? yes no
___2. Two-year College ..... Did you graduate? yes no
___3. College ..... Did you graduate? yes no
___4. Other courses .....

3.. Did you use outside sources to finance your business? ____yes ___no
If yes, please mark an 'X' beside the source and complete the information.

___**Bank Loan**
Loan Repayment Schedule
___1-3 yrs ___4-6 yrs
___7-9 yrs ___11 and above
Interest Rate_____%

___**Small Business Association (SBA) program**
Loan Repayment Schedule
___1-3 yrs ____4-6 yrs
___7-9 yrs ___11 and above
Interest Rate _____%

___**Other Government Program:** .....
Loan Repayment Schedule
___1-3 yrs ____4-6 yrs
___7-9 yrs ___11 and above
Interest Rate_____%

___**Other Loan (please specify)** .....
Loan Repayment Schedule
___1-3 yrs ____4-6 yrs
___7-9 yrs ___11 and above
Interest Rate _____%

4. Other financial sources. Please place an 'X' beside each source you used.

___ Personal Assets
___ Loan from Family or Friend .....
___ Other (please specify) .....

5. Additional Comments:

Department of Labor and Industry

Research and Analysis Bureau
P.O. Box 1728
Helena, MT 59624

Toll-free in-state 1-800-633-0229
Out of-state 1-800-541-3904
Local 444-2430

1. Is your business still active? yes no

   If no, please give the **month and year** the business closed. _____

2. Mark an 'X' beside the training you received before starting your business.

   A. Prior experience

   ___Apprentice ___Worked in similar business

   ___Owned similar business ___Other (please specify) _____

   B. Education

   ___1. Vo-Tech ..... Did you graduate? yes no

   ___2. Two-year College ..... Did you Graduate? yes no

   ___3. College ..... Did you graduate? yes no

   ___4. Other Courses .....

3. Did you use outside sources to finance your business? yes no

   If yes, please mark an 'X' beside the source and complete the information.

   ___**Bank loan** .....

   Loan Repayment Schedule ..... *Interest Rate* ____%

   ___1-3 yrs ___4-6 yrs ___7-9 yrs ___10 and above

   ___**Small Business Association (SBA) loan or program** .....

   Loan Repayment Schedule ..... *Interest Rate* ____%

   ___1-3 yrs ___4-6 yrs ___7-9 yrs ___10 and above

   ___**Other Government Program (please specify)** .....

   Loan Repayment Schedule ..... *Interest Rate* ____%

   ___1-3 yrs ___4-6 yrs ___7-9 yrs ___10 and above

   ___**Other Loan (please specify)** .....

   Loan Repayment Schedule ..... *Interest Rate* ____%

   ___1-3 yrs ___4-6 yrs ___7-9 yrs ___10 and above

4. Other Financial Sources. Please place an 'X' beside each source you used.

   ___Personal Assets

   ___Loan from Family or Friend

   ___Other (please specify) .....

5. What training or programs (listed above) have been most helpful and least helpful for staying in or increasing your business? These can be either experience, education or financial support.

   Most Helpful: .....

   Least Helpful: .....

6. Additional Comments

CANCELLED NEW BUSINESSES IN 1983 AFTER FIVE YEARS
CLASSIFIED BY COUNTY AND INDUSTRY

COUNTY	Cty Code	Total	The SIC code ranges of the Divisions 01-09	10-14	15-17	20-39	40-49	50-51	52-59	60-67	70-89	99
Beaverhead	001	18	1	2	3	1		3	2	1	5	
Big Horn	003	12			4				2		6	
Blaine	005	4			1				1		2	
Broadwater	007	6			2	3					1	
Carbon	009	15	1		3				2	1	8	
Carter	011	1		1								
Cascade	013	119		3	22	5	7	7	30	8	37	
Choteau	015	7			1				2		4	
Custer	017	26	2	1	9		1	1	3	2	7	
Daniels	019	4			2				1		1	
Dawson	021	18		1	1	1	6	1	4	1	2	1
Deer Lodge	023	12		1	1	2	1	1	3	1	2	
Fallon	025	3			1				1		1	
Fergus	027	15	3	2	4			1	4	1		
Flathead	029	141	3	1	41	15	16	3	28	12	22	
Gallatin	031	88	3		22	8	3	8	16	7	21	
Garfield	033	2			1		1					
Glacier	035	15		2	3	1			6		3	
Golden Valley	037	0										
Granite	039	4		1	1	1			1			
Hill	041	16			5			1	4		6	
Jefferson	043	14		2	4		3		3		2	
Judith Basin	045	4					1	1	1		1	
Lake	047	30			6	4	1	1	6	2	9	1
Lewis & Clark	049	79	1	2	22	7	2	5	12	4	24	
Liberty	051	0										
Lincoln	053	52	3		13	14	3	1	9		9	
McCone	055	4			3				1			
Madison	057	16		6	2	1		2	2		3	
Meagher	059	10		3		2	1		2		2	
Mineral	061	9			3	4			1	1		
Missoula	063	126	5	1	17	10	9	14	25	6	38	1
Musselshell	065	4				1	1		1		1	
Park	067	25			5	3	3		7	2	5	
Petroleum	069	1			1							
Phillips	071	7			2		1	1	2	1		
Pondera	073	7	1		1			1			4	
Powder River	075	3					2				1	
Powell	077	9		4			1		1		3	
Praire	079	1				1						
Ravalli	081	46	3		12	1	7	1	10	2	10	
Richland	083	20		9	1	1	4	1	1		3	

CANCELLED NEW BUSINESSES IN 1983 AFTER FIVE YEARS
CLASSIFIED BY COUNTY AND INDUSTRY

COUNTY	Cty Code	Total	The SIC code ranges of the Divisions 01-09	10-14	15-17	20-39	40-49	50-51	52-59	60-67	70-89	99
Roosevelt	085	23	1	3	5		3		5		5	1
Rosebud	087	18	1		8	2	1				6	
Sanders	089	18			4	3	4		4		3	
Sheridan	091	7		1	4			1			1	
Silver Bow	093	27		1	4	1	2	3	6		9	1
Stillwater	095	10	1		3		1	1			3	1
Sweet Grass	097	3									3	
Teton	099	3	1		1						1	
Toole	101	6	1		2		1		2			
Treasure	103	2									1	1
Valley	105	14			5			2	2		5	
Wheatland	107	0										
Wibaux	109	0										
Yellowstone	111	228	2	8	51	7	15	26	34	16	69	
Unclassified	999	59	1	7	18		5	9	3		9	7
Total		1411	34	62	324	99	106	96	250	68	358	14

NUMBER OF BUSINESSES ALIVE EACH YEAR BY SIC CODE

SIC CODE	FIRST	SECOND	THIRD	FOURTH	FIFTH
01	11	10	8	8	8
02	11	10	8	7	5
07	29	24	23	21	20
08	12	9	8	7	6
09	0	0	0	0	0
10	15	7	4	4	3
12	1	1	1	1	1
13	27	19	16	10	9
14	6	5	5	4	4
15	158	127	97	74	63
16	42	27	22	21	18
17	145	111	91	73	62
20	14	12	11	10	9
23	7	5	3	3	3
24	72	56	44	38	33
25	2	2	2	2	1
27	8	7	7	5	5
28	4	4	2	2	2
30	3	2	2	1	1
32	1	1	1	1	1
33	3	2	1	1	0
34	3	1	0	0	0
35	5	5	4	4	3
36	1	1	0	0	0
37	3	2	2	2	2
38	3	3	1	1	1
39	1	0	0	0	0
41	1	1	1	1	1
42	99	78	71	58	46
43	1	1	0	0	0
45	11	8	5	4	4
47	8	8	8	7	7
48	13	12	11	10	10
49	6	6	6	6	6
50	84	65	52	43	40
51	44	38	31	29	27
52	20	17	14	13	12
53	5	5	5	4	4
54	35	27	25	24	22
55	34	31	26	23	23
56	35	30	25	25	19
57	46	36	30	27	22
58	131	108	92	80	73
59	91	72	64	55	49
60	3	3	3	2	2

NUMBER OF BUSINESSES ALIVE EACH YEAR BY SIC CODE

SIC CODE	FIRST	SECOND	THIRD	FOURTH	FIFTH
61	8	8	8	8	8
62	4	4	4	4	3
63	6	6	6	6	6
64	42	39	33	30	28
65	54	45	38	34	31
67	4	3	3	3	3
70	16	14	14	12	8
72	44	39	32	28	24
73	106	80	65	46	44
75	42	34	29	22	21
76	30	23	18	16	11
78	10	10	9	9	7
79	35	30	26	25	22
80	72	67	62	61	56
81	37	34	30	28	27
82	6	6	5	5	5
83	37	31	30	27	23
84	3	2	2	2	2
85	1	1	1	1	1
86	22	19	16	16	15
87	47	46	45	40	38
88	44	31	21	16	15
89	21	14	10	8	7
99	4	2	0	0	0
Overall:	1949	1587	1339	1158	1032

NEW BUSINESSES IN 1983 BY INDUSTRY AND COUNTY
THAT ARE STILL ACTIVE AFTER FIVE YEARS

County (NAME)	Cty Code	Total	SIC CODES 01-09	10-14	15-17	20-39	40-49	50-51	52-59	60-67	70-89	99
Beaverhead	001	14		1	1	5	1				6	
Big Horn	003	6			1		1				4	
Blaine	005	5	2				1		1	1		
Broadwater	007	6				2	2		1		1	
Carbon	009	10			1	1			5		3	
Carter	011	1		1								
Cascade	013	80	3		13		4	2	19	6	33	
Choteau	015	3	1				1		1			
Custer	017	10			2			1	1	3	3	
Daniels	019	3			1				1	1		
Dawson	021	14		1	1				3	1	8	
Deer Lodge	023	8		1		1		1		2	3	
Fallon	025	4			1		1	2				
Fergus	027	7	1	2	1			1	1		1	
Flathead	029	102	6		13	10	5	7	29	10	22	
Gallatin	031	96	3	1	20	6	7	5	17	4	33	
Garfield	033	1								1		
Glacier	035	11	2		1		1	1	2		4	
Golden Valley	037	0										
Granite	039	4				1	2			1		
Hill	041	21	2		5		1	1	4	1	7	
Jefferson	043	5		1	1				1	1	1	
Judith Basin	045	3			1				1		1	
Lake	047	16	1		6	3				2	4	
Lewis & Clark	049	61	1		8	3			17	4	28	
Liberty	051	1									1	
Lincoln	053	22	2		1	6	2		6	1	4	
McCone	055	1		1								
Madison	057	6							5		1	
Meagher	059	3			1	1					1	
Mineral	061	6				1			4		1	
Missoula	063	109	5		16	9	4	7	19	7	42	
Musselshell	065	4						1	1		2	
Park	067	25			2	3	1		5		14	
Petroleum	069	0										
Phillips	071	1									1	
Pondera	073	4			1				2	1		
Powder River	075	1									1	
Powell	077	4							3	1		
Praire	079	0										
Ravalli	081	24	2		1	3	1	2	10	1	4	
Richland	083	8			3		1	2			2	

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County (NAME)	Cty Code	Total	SIC CODES 01-09	10-14	15-17	20-39	40-49	50-51	52-59	60-67	70-89	99
Roosevelt	085	9		2			1		4		2	
Rosebud	087	4			1	1			1	1		
Sanders	089	10			2	1	5		1		1	
Sheridan	091	5		1	1		1		1		1	
Silver Bow	093	30			3	1		2	8	3	13	
Stillwater	095	7			1		1		2		3	
Sweet Grass	097	2	1		1							
Teton	099	3							1	1	1	
Toole	101	12	1	2	2	1	1	1	1	1	2	
Treasure	103	2							2			
Valley	105	9	1				2		1		5	
Wheatland	107	1								1		
Wibaux	109	0										
Yellowstone	111	185	4	1	24	2	18	25	34	23	54	
Unclassified	999	27	1	2	4	1	7	6	1	1	4	
TOTAL		1016	39	17	141	62	72	67	216	80	322	

*INDUSTRY CODES AND TITLES

01-09	Agriculture, Forestry and Fishing
10-14	Mining
15-17	Construction
20-39	Manufacturing
40-49	Transportation, Communications, and Public Utitlites
50-51	Wholesale Trade
52-59	Retail Trade
60-67	Finance, Insurance and Real Estate
70-89	Services
99	Unclassified

RESEARCH & ANALYSIS
DEPARTMENT OF LABOR & INDUSTRY
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OFFICIAL BUSINESS

POSTAGE AND FEES PAID
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LAB 449

THIRD CLASS

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